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☐	L5	424/450.ccls. and (acrylic adj1 acid)	121
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☐	L1	peaa	23

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L1: Entry 4 of 23 File: USPT Aug 20, 2002

DOCUMENT-IDENTIFIER: US 6436905 B1
TITLE: Lipid-containing compositions and uses thereof

Brief Summary Text (18):
An example of one lipid-solubilizing synthetic amphipathic polymer including both hydrophobic groups and anionic hydrophilic groups which can be used in carrying out the invention is the homopolymer poly(2-ethyl acrylic acid) (PEAA) that has previously been reported as interacting in aqueous solutions at pH >7 with phosphatidylcholines such as dilauroylphosphatidyicholine (DLPC) and dipalmitoylphosphatidylcholine (DPPC) to yield suspensions of multilamellar vesicles which clear when the pH is lowered below a critical value of approximately 6.5. See for example K. Seki et al. (1984) "pH-Dependent Complexation of Poly (acrylic acid) Derivatives with Phospholipid Vesicle Membranes", Macromolecules, 17, 1692-1698, D. A. Tirrell et al. (1985) "pH Sensitisation of Phospholipid Vesicles via Complexation with Synthetic Poly(carboxylic acid)s", Ann. N.Y. Acad. Sci 446, 237-248, and K. A. Borden et al. (1987) "Polyelectrolyte adsorption induces a vesicle-to-micelle transition in aqueous dispersions of dipalmitoylphosphatidylcholine", Polymer Preprinits, 28, 284-285).

Brief Summary Text (23):
In carrying out the invention, instead of PEAA other similar vinyl homopolymers of an acrylic acid derivative having a hydrophobic side chain, e.g. 2-propyl acrylic acid, or other poly(carboxylic acid) polymers having pendant hydrophobic side groups in addition to anionic hydrophilic groups, may be used. In preferred embodiments, however, the selected synthetic lipid-solubilizing amphipathic polymer will be a linear alternating vinyl copolymer formed by free radical addition polymerisation of an unsaturated dicarboxylic acid, or an anhydride or monoester of said dicarboxylic acid, with a monoenoic vinyl monomer or monomers in alternating relationship.

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L1: Entry 5 of 23 File: USPT Jul 30, 2002

US-PAT-NO: 6426086
DOCUMENT-IDENTIFIER: US 6426086 B1

TITLE: pH-sensitive, serum-stable liposomes

DATE-ISSUED: July 30, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Papahadjopoulos; Demetrios	late of San Francisco	CA		
Meyer; Olivier	Strasbourg			FR
Leroux; Jean-Christophe	Montreal			CA

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
The Regents of the University of California	Oakland	CA			02

APPL-NO: 09/ 243098 [PALM]
DATE FILED: February 2, 1999

PARENT-CASE:
CROSS-REFERENCES TO RELATED APPLICATIONS This case claims priority from U.S. Serial No. 60/073,471, filed Feb. 3, 1998, the contents of which are incorporated by reference.

INT-CL: [07] A61 K 9/127

US-CL-ISSUED: 424/450; 424/1.21, 424/9.321, 424/9.51, 424/94.3, 428/402.2, 935/54
US-CL-CURRENT: 424/450; 424/1.21, 424/9.321, 424/9.51, 424/94.3, 428/402.2

FIELD-OF-SEARCH: 424/450, 424/1.21, 424/9.321, 424/9.51, 424/417, 424/94.3, 424/812, 436/829, 935/54, 428/402.2

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL Clear

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4448765	May 1984	Ash	424/450
☐	5891468	April 1999	Martin	424/450

OTHER PUBLICATIONS

Alving et al., "Liposomes Containing Liquid A: A Potent Nontoxic Adjuvant for a Human Malaria Sporozoite Vaccine," Immunology Letters, 24:275-280 (1990).
Brazel et al., "Pulsatile Local Delivery of Thrombolytic and Antithrombotic Agents Using Poly(N-isopropylacrylamide-co-methacrylic acid) Hydrogels," J. Controlled Release, 39:57-64 (1996).
Chen et al., "Graft Copolymers that Exhibit Temperature-induced Phase Transitions Over a Wide Range of pH," Nature, 373:49-52 (1995).
Collins et al., "Structural and Functional Comparisons of pH-Sensitive Liposomes composed of Phosphatidylethanolamine and Three Different Diacylsuccinylglycerols," Biochimica et Biophysica Acta, 1025:234-242 (1990).
Chung et al., "pH-Sensitive, Cation-Selective Channels Formed by a Simple Synthetic Polyelectrolyte in Artificial Bilayer Membranes," Macromolecules, 29:4636-4641 (1996).
Liposomes as Tools in Basic Research and Industry, eds. Philippot and Schuber, CRC Press, Boca Raton, Fl. pp. 177-188 (1995).
Liposomes as Tools in Basic Research and Industry, eds. Philippot and Schuber, CRC Press, Boca Raton, Fl. pp. 201-214 (1995).
Connor et al., "Biodistribution of pH-Sensitive Immunoliposomes," Biochimica et Biophysica Acta, 884:474-481 (1986).
Dong et al., "A Novel Approach for Preparation of ph-Sensitive Hydrogels for Enteric Drug Delivery," J. Controlled Release, 15:141-152 (1991).
Ellens et al., "pH-Induced Destabilization of Phosphatidylethanolamine-Containing Liposomes: Role of Bilayer Contact," Biochemistry, 23:1532-1538 (1984).
Feil et al., "Effect of Comonomer Hydrophilicity and Ionization on the Lower Critical Solution Temperature of N-Isopropylacrylamide Copolymers," Macromolecules, 26:2496-2500 (1993).
Franzin et al., "Destabilization of Cationic Liquid Vesicles by an Anionic Hydrophobically Modified Poly(N-Isopropylacrylamide) Copolymer: A Solid-State .sup.31 P NMR and .sup.2 H NMR Study," Biochimica et Biophysica Acta, 1415:219-234 (1998).
Hayashi et al., "Temperature-Controlled Release Property of Phospholipid Vesicles Bearing a Thermo-Sensitive Polymer," Biochimica et Biophysica Acta, 1280:127-134 (1996).
Hayashi et al, "Temperature-Dependent Associating Property of Liposomes Modified with a Thermosensitive Polymer," Bioconjugate Chem., 9:382-389 (1998).
Hirotsu et al., "Volume-phase Transitions of Ionized N-Isopropylacrylamide Gels," J. Chem. Phys., 87(2):1392-1395 (1987).
Kim et al., "Temperature-Sensitivity of Liposomal Lipid Bilayers Mixed with Poly (N-Isopropylacrylamide-co-acrylic Acid)," J. Biochem., 121:15-19 (1997).
Kim et al., "pH/Temperature-Sensitive Polymers for Macromolecular Drug Loading and Release," J. Controlled Release, 28:143-152 (1994).
Kim et al., "Temperature-Sensitive Releases From Liposomes Containing Hydrophobically Modified Poly(N-Isopropylacrylamide," Korean J. Chem. Eng., 16:28-33 (1999).
Kirpotin et al., "Liposomes with Detachable Polymer Coating: Destabilization and Fusion of Dioleoylphosphatidylethanolamine Vesicles Triggered by Cleavage of Surface-Grafted Poly(Ethylen Glycol)," FEBS Letters, 388:115-118 (1996).
Kono et al., "Novel pH-Sensitive Liposomes: Liposomes Bearing a Poly(Ethylen Glycol) Derivative with Carboxyl Group," Biochimica et Biophysica Acta, 1193:1-9 (1994).
Kono et al., "Temperature-Sensitive Liposomes: Liposomes Bearing Poly(N-Isopropylacrylamide)," J. Controlled Release, 30:69-75 (1994).
Kono et al., "Thermosensitive Polymer-Modified Liposomes Combining Protonatable Double-Chain Amphiphiles with Phosphatidylethanolamine," Biochemistry, 26:3267-3276 (1987).
Litzinger et al., "Phosphatidylethanolamine Liposomes: Drug Delivery, Gene Transfer and Immunodiagnostic Applications," Biochimica et Biophysica Acta, 1113:201-227 (1992).

Liu et al., "Small, but Not Large, Unilamellar Liposomes Composed of Dioleoylphosphatidylethanolamine and Oleic Acid Can Be Stabilized by Human Plasma," Biochemistry, 28:7700-7707 (1989).
Liu et al., "pH-Sensitive Plasma-Stable Liposomes with Relatively Prolonged Residence in Circulation," Biochimica et Biophysica Acta, 1022:348-354 (1990).
Murthy, N., et al. "Design of Polymer to Increase the Efficiency of Endosomal Release of Drugs," Proc. Intern. Symp. Control Rel. Bioact. Mater., 25:224-225 (1998).
Polozova et al., "Effect of Polymer Architecture on the Interactions of Hydrophobically-Modified Poly-(N-Isopropylamides) and Liposomes," Colloids and Surfaces A Physicochemcial and Engineering Aspects, 147:17-25 (1999).
Polozova et al., "Mechanism of the Interaction of Hydrophobically-Modified Poly-(N-Isopropylacrylamides) with Liposomes," Biochimica et Biophysica Acta, 1326:213-224 (1997).
Ringsdorf et al., "Interaction of Hydrophobically-Modified Poly-N-Isopropylacrylamides with Model Membranes--or Playing a Molecular Accordion," Angew. Chem. Int. Ed. Engl., 30:315-318 (1991).
Ringsdorf et al., "Interactions of Liposomes and Hydrophobically-Modified Poly-(N-Isopropylacrylamides): An Attempt to Model the Cytoskeleton," Biochimica et Biophysica Acta, 1153:335-344 (1993).
Slepushkin et al., "Sterically Stabilized pH-Sensitive Liposomes," J. Biological Chemistry, 272(4):2382-2388 (1997).
Straubinger et al., "pH-Sensitive Liposomes Mediate Cytoplasmic Delivery of Encapsulated Macromolecules," FEBS Letters, 179(1):148-154 (1985).
Tirrell et al., "pH Sensitization of Phospholipid Vesicles Via Complexation with Synthetic Poly(carboxylic Acid)," Annals New York Academy of Sciences, 446:237-248 (1985).
Wagner et al., "Influenza Virus Hemagglutinin HA-2 N-Terminal Fusogenic Peptides Augment Gene Transfer by Transferrin-Polylysine-DNA Complexes: Toward a Synthetic Virus-Like Gene--Transfer Vehicle," Proc. Natl. Acad. Sci., 89:7934-7938 (1992).
Wheatley et al., "pH-Dependent Pore Formation in Liposomes: An Approach to Triggered Release,"0 Proc. Intern. Symp. Controlled Release of Bioactive Materials, 21:600-601 (1994).
Winnik et al., "Pyrene-Labeled Amphiphilic Poly-(N-Isopropylacrylamides) Prepared by Using a Lipophilic Radical Initiator: Synthesis, Solution Properties in Water, and Interactions with Liposomes," Can. J. Chem., 73:2030-2040 (1995).
Woodle et al., "Sterically Stabilized Liposomes," Biochimica et Biophysica Acta, 1113:171-199 (1992).
Wu et al., "Conjugation of Phosphatidylethanolamine to Poly(N-Isopropylacrylamide) for Potential Use in Liposomal Drug Delivery Systems," Polymer, 33:4659-4662 (1992).

ART-UNIT: 1615

PRIMARY-EXAMINER: Kishore; Gollamudi S.

ATTY-AGENT-FIRM: Townsend and Townsend and Crew, LLP

ABSTRACT:

This invention relates to the field of liposomes. In particular, this invention provides novel liposomes that are pH-sensitive, yet are also stable in serum. The liposomes are complexed with a molecule comprising a thermally-sensitive polymer showing lower critical solution temperature behavior in aqueous solutions, said thermally-sensitive polymer bearing a hydrophobic substituent and a pH sensitive substituent, wherein said hydrophobic substituent is less than 10 kD and which pH sensitive substituent remains ionizable following said covalent bonding to said thermally-sensitive polymer, and whose pH sensitive does not depend on cleavage of the covalent bond to said thermally-sensitive polymer. The invention further

relates to methods of conferring pH sensitivity upon liposomes by complexing the liposomes with such molecules.

33 Claims, 3 Drawing figures

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L1: Entry 17 of 23 File: USPT May 1, 1990

DOCUMENT-IDENTIFIER: US 4921757 A

**** See image for Certificate of Correction ****

TITLE: System for delayed and pulsed release of biologically active substances

Detailed Description Text (16):

"pH-triggering of phosphatidyl choline membrane properties via complexation with synthetic poly(carboxylic acid)s" by Seki et al in "Polym. Materials Sciences and Eng.", Proc. of Acs. Div. of Polym. Materials Meeting in Philadelphia, PA., ACS, 51, 216-219 (1984) describes the use of a synthetic poly(carboxylic acid), poly (alphaethylacrylic acid) PEAA to effect a pH-dependent release of the contents of vesicles formed from egg yolk phosphatidyl choline. Phosphatidyl choline vesicles are unaffected by PEAA at high pH but are rendered unstable at pH 7 or below. Since the pH of lysosomes is approximately 4.6, liposomes which are intact when they circulate in the bloodstream at physiological pH may be stimulated to release their contents when they are taken up by the lysosome-containing cells, usually by endocytosis.

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L1: Entry 19 of 23 File: USPT May 23, 1989

DOCUMENT-IDENTIFIER: US 4832745 A
TITLE: Non-aqueous dental cements based on dimer and trimer acids

Detailed Description Text (3):
The base and/or filler (i.e., the powder component) may be SrO or binary mixtures of ZnO and ZrO.sub.2, ZnO and CaSiO.sub.3 ; ZnO and ethylene acrylic acid copolymer 5 (PEAA), Ca(OH).sub.2 and tribasic calcium phosphate; Ca(OH).sub.2 and MgO; Ca (OH).sub.2 and TiO.sub.2, Ca(OH).sub.2 and ZnO, ZnO and TiO.sub.2, Ca(OH).sub.2 and SrO, ZnO and SrO, or ZnO and Al.sub.2 O.sub.3. If ZnO is used, the powder is preferably micronized. All percentages and ratios referred to herein are by weight, unless otherwise stated. Additional fillers may be included in the mixtures used.

Detailed Description Text (7):
Preferably, when a ZnO-containing powder (except when mixed with PEAA or Ca (OH).sub.2) is used, ZnO is about 20-90 weight percent of the powder, and a powder to liquid ratio of greater than 4, and preferably at least 5, up to at least 10, is used. When ZnO is mixed with PEAA in a powder, ZnO should be about 92-80 weight percent of the powder. The use of PEAA as a filler does not significantly affect the preferred powder/liquid (P/L) ratio.

Detailed Description Paragraph Table (2):
TABLE B _____ CEMENT ADDITIVES Formula or Name Acronym Form Source _____ Tribasic HA Powder Fisher Scientific Calcium Co. Fairlawn, Phosphate NJ Titanium Oxide TiO.sub.2 Powder Fisher Scientific Co. Fairlawn, NJ Calcium CaSiO.sub.3 Powder Interpace Corp. Metasilicate Willsboro, NY Zirconia ZrO.sub.2 Powder Applied (Zirconium Ceramics, Inc. Dioxide) Atlanta, GA Aluminum Al(OH).sub.3 Powder Matheson, Hydroxide Coleman & Bell Norwood, OH Aluminum Oxide Al.sub.2 O.sub.3 Powder Alcoa Chemicals (Hydral 710) Bauxite, AR poly(methyl PMMA Powder Esschem methacrylate) Essington, PA poly(vinylidene PVF.sub.2 Powder Penwalt Corp. fluoride) (Grade 960 ES) Philadelphia, PA Ethylene/Acrylic PEAA 15% Acrylic Scientific Acid Copolymer Acid Polymer Prod. Ontario, NY _____

Detailed Description Paragraph Table (3):
TABLE 1 _____
Properties of DA/ZnO Cements 24 H. Mechanical Strength (MPa) Powder Component P/L Ratio Set. Time Diametral Cement In Powder In Liquid w/w Min Compressive Tensile _____ A
ZnO.sup.1 -- 7 7.5 49.4 (2.1).sup.2 6.5 (0.5).sup.2 B ZnO.sup.3 -- 7 10.0 46.4 (1.0) 5.8 (2.5) C ZnO.sup.1 (86%), MgO.sup.4 -- 4 7.0 46.6 (1.0) 5.7 (0.8) D.sup.6 ZnO.sup.1 ZrO.sub.2 (67%) 9 9.5 46.6 (4.8) 6.2 (0.9) E.sup.6 ZnO.sup.5 CaSiO.sub.3 (67%) 5 3.5 22.0 (1.0) 8.2 (0.8) F.sup.6 ZnO.sup.1 PEAA(5%) 7 9.0 45.6 (1.3) 5.7 (0.4) G.sup.6 ZnO.sup.1 PEAA(10%) 7 9.5 46.9 (2.2) 5.6 (0.6)
_____ .sup.1
Micronized ZnO .sup.2 Standard Deviation .sup.3 Activated with 0.5% PA .sup.4 Activated with 1.0% AA .sup.5 Activated with 2.0% PA .sup.6 Resisted fracture under compression at crosshead speed of 1 mm/min

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L1: Entry 20 of 23 File: USPT Jan 7, 1986

DOCUMENT-IDENTIFIER: US 4563392 A
TITLE: Coated extended chain polyolefin fiber

Detailed Description Paragraph Table (2):
TABLE 2 _____ Conc Temp F.sub.PO SB Run Polymer* (g/L) .degree.C. Regime N kPa _____ A EAAO 60 87 First 0.98 1580 B EAAO 60 87 Second 1.20 2000 C PE-AA 60 105 First 1.38 2270 D PE-AA 60 205 Second 1.56 2620 E EAA2 60 95 First 1.33 2340 F EAA5 60 95 First 1.42 2340 G OPE2 60 95 First 1.25 2070 H OPE2 120 95 First 1.56 2620 I OPE6 60 95 First 1.47 2400 J OPE6 120 95 First 1.38 2270 uncoated fiber -- -- -- 0.67 1100 _____ *The polymers used were: EEAO -- a low molecular weight ethyleneacrylic acid copolymer of acid number 120 sold by Allied Corporation as AC 5120 copolymer PEAA -- a polyethylene graft acrylic acid having 6% acrylic acid sold by Reichhold Chemical as PE452 EAA2 -- an ethyleneacrylic acid copolymer of acid number 49.2 sold by Dow Chemical as DowPE-452. EAA5 -- an ethyleneacrylic acid copolymer of acid number 52 sold by Dow Chemical as EAA455 OPE2 -- an oxidized polyethylene of acid number 28 sold by Allied Corporation as AC 392 oxidized polyethylene OPE6 -- An oxidized polyethylene of acid number 16 sold by Allied Corporation as AC .RTM. 316A oxidized polyethylene

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L5: Entry 62 of 121 File: USPT Feb 15, 2000

DOCUMENT-IDENTIFIER: US 6024978 A
**** See image for Certificate of Correction ****
TITLE: Pharmaceutical compositions comprising cyclosporins

Brief Summary Text (104):
4.1. Polyacrylate and polyacrylate co-polymer resins, for example poly-acrylic acid and poly-acrylic acid/methacrylic acid resins such as known and commercially available under the trade name Carbopol (c.f. Fiedler, loc. cit., pp. 254-256), in particular the products Carbopol 934, 940 and 941, and Eudragit (c.f. Fiedler, loc. cit., pp. 486-487), in particular the products Eudragit E, L, S, RL and RS and, most especially, the products Eudragit E, L and S;

Current US Original Classification (1):
424/450

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L5: Entry 75 of 121 File: USPT Aug 10, 1999

DOCUMENT-IDENTIFIER: US 5935599 A
**** See image for Certificate of Correction ****
TITLE: Polymer-associated liposomes for drug delivery and method of manufacturing the same

Detailed Description Text (31):
The anionic polymer typically is an acrylic polymer containing a sufficient amount of acid-containing monomers, like acrylic acid, methacrylic acid, vinylsulfonic acid, or vinylphosphonic acid. The acid-containing monomer can be, but is not limited to, acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, mesaconic acid, citraconic acid, vinylsulfonic acid, vinylphosphonic acid, and similar .alpha., .beta.-unsaturated carboxylic acids and .alpha., .beta.-unsaturated dicarboxylic acids. The polymer is in a salt form when utilized to prepare a PAL.

Current US Original Classification (1):
424/450

CLAIMS:

16. The method of claim 1 wherein the synthetic of (b) (ii) polymer comprises an .alpha., .beta.-unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, mesaconic acid, citraconic acid, vinylphosphonic acid, and mixtures thereof.

L5: Entry 104 of 121 File: USPT Mar 12, 1996

DOCUMENT-IDENTIFIER: US 5498420 A
**** See image for Certificate of Correction ****
TITLE: Stable small particle liposome preparations, their production and use in topical cosmetic, and pharmaceutical compositions

Brief Summary Text (46):
liposome preparation, wherein the gel is selected from gels incorporating a polyacrylic acid, a gel-forming cellulose compound, or a sodium salt of an acrylic acid-acrylamide copolymerisate; such a

Brief Summary Text (70):
process, wherein in step (b) polyacrylic acid, a gel-forming cellulose compound, or a sodium salt of an acrylic acid-acrylamide copolymerisate is employed as jellifying agent; such a

Brief Summary Text (119):
Liposome preparations for topical application are usually mixed with polymer jellifying agents to increase viscosity and improve application. For this purpose, especially polyacrylic acid (0.2 to 1.5%), gel-forming cellulose derivatives (0.2 to 3%) and sodium salts of acrylic acid/acrylamide copolymerisates (CTFA nomenclature -1 to 4%); commercially available as Hostacerin PN73.RTM.) in the concentrations indicated are used. When adding such jellifying agents to liposome preparations made of pure lecithin, the vesicles frequently aggregate as a result of interactions with the polymer or otherwise. In contrast to that, the fatty acid-esterified collagen hydrolysate-containing vesicles according to the invention surprisingly show only a slight change in vesicle size after having been made into polymer gels. This is documented in the following Table 5.

Current US Original Classification (1):
424/450

CLAIMS:

10. A liposome preparation according to claim 9, wherein the gel is selected from the group consisting of a polyacrylic acid, gel a cellulose gel, or a sodium salt of an acrylic acid-acrylamide copolymerisate.